

## **HIGH OUTPUT IMPEDANCE BIASING FOR MAGNETORESITIVE ELEMENTS**

### **ABSTRACT**

**[024]** Disclosed are methods and circuits (10) for biasing magnetoresistive elements (14). The methods and circuits (10) of the invention provide high output impedance current sources using an MR element (14) and a constant-voltage biasing loop (16) combined with a common-mode feedback loop (18). The common-mode feedback loop (18) is configured to maintain the potential of the MR element (14) at approximately zero Volts. Disclosed embodiments of the invention use complementary current mirrors (Q20, Q22) to substantially eliminate current differentials in the common-mode feedback loop (18) in order to hold the MR head potential at approximately zero Volts. Also disclosed are methods and circuits (10) in which a reference current source (28) is provided in a common-mode feedback subcircuit (18). Preferred embodiments of the invention are described in which bipolar transistors (Q), for example MOSFETs or JFETs, are used in circuits for performing method steps.